REMARKS

Claims 1-15 are pending in the application. Claims18-20 were previously canceled. Claims 1 and 9 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claims 1-4 and 6 were rejected under 35 U.S.C. Section 102(b) as being anticipated by "Overcoming Peak-to-Average Power Ratio Issues in OFDM via Carrier-Interferometry Codes" (Wiegandt et al.); and claims 5 and 7-15 were rejected as being unpatentable over Wiegandt et al. in view of US Patent Publication No. 2003/0103445 (Steer et al).

35 U.S.C. Section 102 Rejections

Claims 1-4 and 6 were rejected under 35 U.S.C. Section 102(b) as being anticipated by Wiegandt et al. Reconsideration is respectfully requested.

Claims 1 and 9 have been amended to further clarify the invention. In particular, independent claim 1 has been amended to recite:

> [I]n a Carrier Interferometry (CI) transmitter:
> a CI coder adapted to encode at least one data sequence onto a CI code to produce at least one data-bearing code vector and to adjust subcarrier weights, and
> a modulator adapted to modulate the at least one data-bearing code vector onto a plurality of subcarriers.

Independent claim 9 has been similarly amended. Support for the amendment is provided by the original specification, claims and figures. In particular, **FIG. 1** and the specification disclose a transmitter **100** and receiver **120** that include a CI Coder **105** and CI Decoder **125**, respectively. Further, the specification discloses that subcarrier weights may be allocated relative to any combination of network operating parameters and operational specifications and that the process

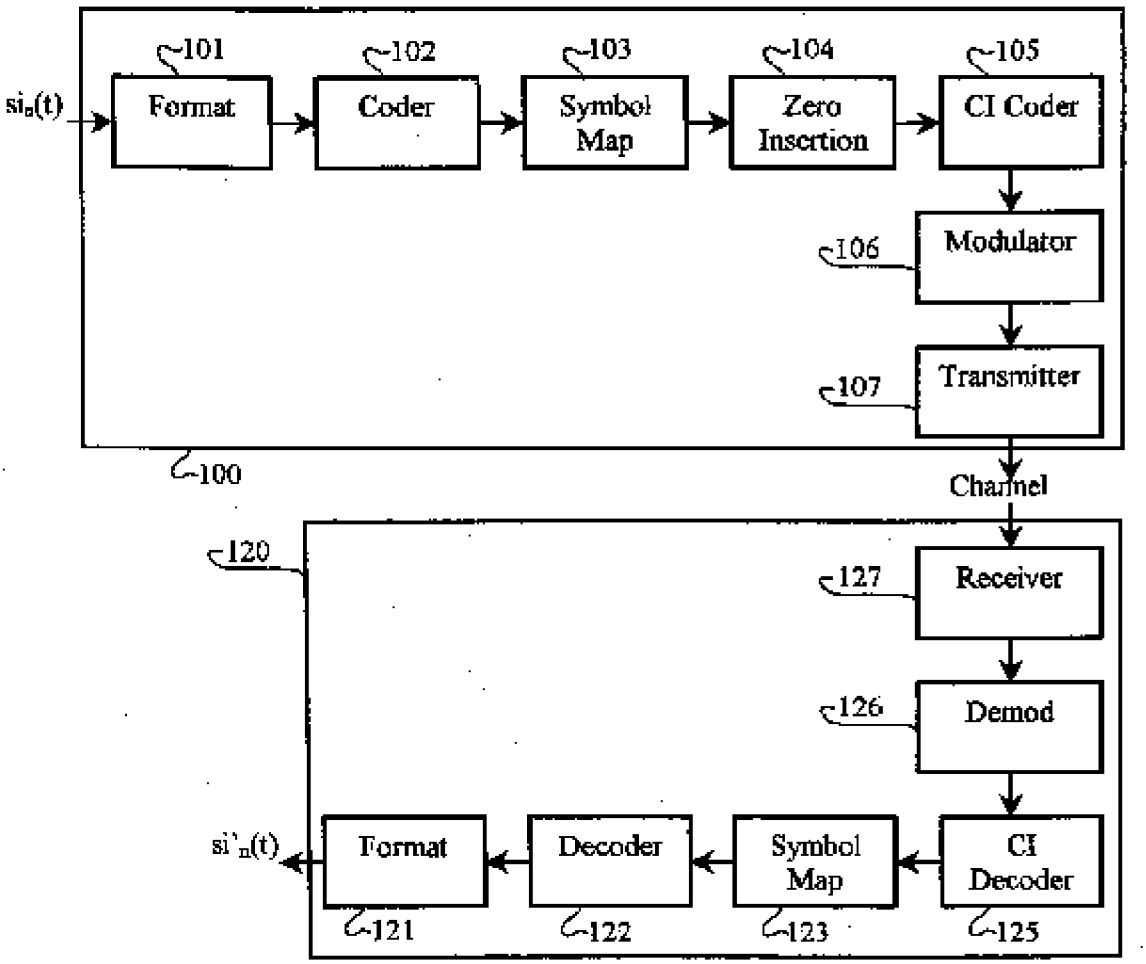

FIG. 1

of generating chirp subcarrier weights is similar to the methods disclosed with respect to **FIGS. 2** and **4**.[1] Moreover, the specification discloses that the CI code module **105** may be adapted to *provide or adjust sub-carrier weights*, such as for spectrum management, security, and/or to reduce the dynamic range of the multicarrier waveform (emphasis added).[2] It is respectfully submitted that the CI decoder module **125** inherently has the capability to reverse/decode the

[1] Published Patent Application Publication No. US 2004/0100897 at paragraph **[0011],** lines 1-3; and paragraph **[0026],** lines 8-10.
[2] Id. at paragraph [0044], lines 1-4.

functions implemented in the CI coder module **105**. Thus, it is respectfully submitted that the amendments to the claims does not raise any question of new matter.

Wiegandt et al. discloses a method for using Carrier Interferometry (CI) phase coding to eliminate peaks in an envelope of an Orthogonal Frequency Division Multiplexer (OFDM) signal.[3] In particular, **FIG. 2(a)** of Wiegandt et al. below discloses a CI/OFDM transmitter, wherein a serial-to-parallel (S/P) converter is used to convert a serial stream of N input bits into parallel form (i.e., bit 1, bit 2, … bit N); each of the N input bits is then further expanded by being modulated onto N carriers (i.e. *see* $e^{j2\pi(n-1)\Delta f t}$ $e^{j(n-1)\Delta\theta k}$ in **FIG. 2(b),** where n, k = 0, 1, …N-1); and the N modulated carriers are then summed to produce $s_k(t)_{CI/OFDM}$ and the output signal $s(t)_{CI/OFDM}$ from the CI/OFDM is produced for transmission over a channel.

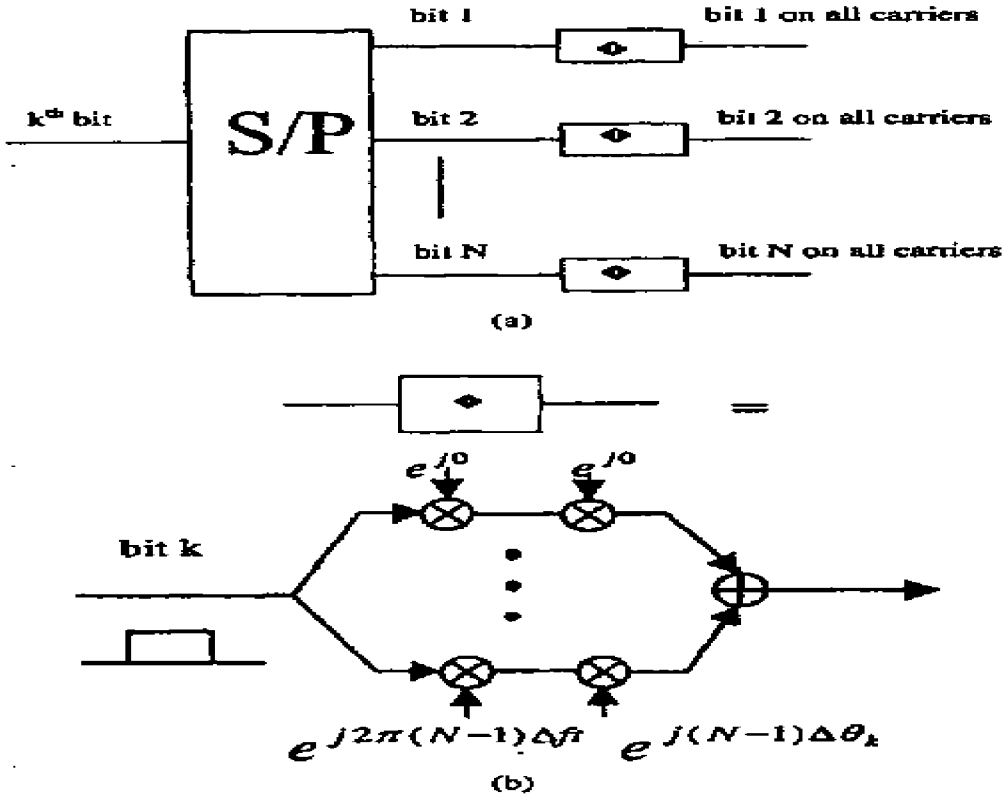

Figure 2: (a) CI/OFDM Transmitter, (b) Expansion of bit k to the N carriers from part (a)

[3] Wiegandt et al. at ABSTRACT.

However, it is respectfully submitted that Wiegandt et al. nowhere discloses, as independent claim 1 has been amended to recite:

> [I]n a Carrier Interferometry (CI) transmitter:
> a CI coder adapted to encode at least one data sequence onto a CI code to produce at least one data-bearing code vector *and to adjust subcarrier weights*, and
> a modulator adapted to modulate the at least one data-bearing code vector onto a plurality of subcarriers.

That is, though as discussed above, Wiegandt et al. discloses an CI/OFDM transmitter, Wiegandt et al. nowhere discloses a "CI coder" adapted "to adjust subcarrier weights." In fact, in **Equation (8)** and in the related text on **page 662** of Wiegandt et al. discloses a *constant* value "A" as "the amplitude of any given carrier." That is, Wiegandt et al. actually teaches away from the recited limitation to: "adjust subcarrier weights," by disclosing a constant value "A" for the amplitude of any given carrier.

In addition, though the outstanding Office Action suggests that claims 2-4 are disclosed by Wiegandt et al., it is respectfully submitted that Wiegandt et al. nowhere discloses the limitations of these claims. In particular, Applicants request that if these rejections are to be maintained, that a future Office Action explicitly cite the disclosure of either an "IFFT" or "an invertible transform module" of claims 2 and claim 3, respectively, in Wiegandt et al. That is, it is respectfully submitted that Wiegandt et al. nowhere discloses, as claim 3 recites: "at least one of a Fourier transform, a chirp Z transform, and a sliding transform."

Moreover, it is respectfully submitted that the disclosure of **page 661**, second paragraph of Wiegandt et al. does not disclose the "scrambling," as recited in claim 4. That is, though **Figure 2** of Wiegandt et al. discloses "after serial-to-parallel conversion, each bit is modulated onto all of the N carriers and separablity of the bits is maintained through the use of carefully selected phase offsets," it is respectfully submitted that this is "CI coding" and not "scrambling," as disclosed in paragraph **[0044]** of the published application.

Therefore, it is respectfully submitted that Wiegandt et al. does not disclose, anticipate or inherently teach the claimed invention and that independent claims 1 and 9, and claims dependent thereon, patentably distinguish thereover.

35 U.S.C. Section 103 Rejections

Claims 5 and 7-15 were rejected as being unpatentable over Wiegandt et al. in view of Steer et al. Reconsideration is respectfully requested. In particular,

Claims 5 and 7-8 ultimately depend upon claim 1. Claims 10-15 ultimately depend upon claim 9. As discussed above, Wiegandt et al. does not disclose all of the limitations of either claim 1 or claim 9. Thus, at least for those same reasons, Wiegandt et al. also does not disclose all of the limitations of claims 5 and 7-15.

In addition, the outstanding Office Action acknowledges other deficiencies of Wiegandt et al. and attempts to overcome those deficiencies by combining Steer et al. with Wiegandt et al. However, Steer et al. cannot overcome all of the deficiencies of Wiegandt et al. as discussed below.

Steer et al. discloses wireless communication that is improved by simultaneously transmitting signals that are orthogonal to received signals.[4] In particular, **FIG. 1** of Steer et al. discloses the pattern of sub-carriers assigned for uplink and downlink may be **104** fixed within the radio system **100**; the pattern of sub-carriers may also be changed dynamically to support, for example, changes in the traffic flow in the uplink and downlink directions; and the controller unit **108** in the radio system **100** may measure the traffic flow in each direction and act to increase or decrease the number of sub-carriers allocated to each direction, so that the allocation better accommodates the traffic requirements.[5] Further, Steer et al. discloses the changes in the sub-carrier allocations would be signaled between the base station **102** and the mobile terminals **106** using signaling facilities inherent in the radio communications system and that this signaling would occur before the changes in the sub-carrier allocations so that the two ends remain in synchronization.[6]

However, it is respectfully submitted that Steer et al. nowhere discloses, as independent claim 1 has been amended to recite:

[I]n a Carrier Interferometry (CI) transmitter:

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[4] Steer et al. at ABSTRACT.
[5] *Id.* at **FIG. 1** and paragraph **[0047]**, lines 1-5.
[6] *Id.* at **FIG. 1** and paragraph **[0047]**, lines 5-16.

a CI coder adapted to encode at least one data sequence onto a CI code to produce at least one data-bearing code vector *and to adjust subcarrier weights*, and

a modulator adapted to modulate the at least one data-bearing code vector onto a plurality of subcarriers.

Claim 9 has been similarly amended. That is, though as discussed above, Steer et al. discloses orthogonally receiving signals, Steer et al. nowhere discloses a "CI coder" adapted "to adjust subcarrier weights," as recited in claims 1 and 9. Therefore, it is respectfully submitted that neither Wiegandt et al. nor Steer et al., whether taken alone or in combination, do not disclose, suggest or make obvious the claimed invention and that independent claims 1 and 9, and claims dependent thereon, patentably distinguish thereover.

Conclusions

Applicant believes that the above amendments and remarks address all of the grounds for rejection and place the application in condition for allowance. Applicant, therefore, respectfully requests prompt and favorable consideration of this response and reconsideration of this application.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Dated: June 18, 2008

Respectfully submitted,

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